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Understanding the Radioactive Ingrowth and Decay of Naturally Occurring Radioactive Materials in the Environment: An Analysis of Produced Fluids from the Marcellus Shale

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Figure S1. Schematic of rapid separation of U, Th and Po.

Figure S2. Representative alpha spectra. Panels **(A-D)** are representative spectra collected by *Method 1: TRU-Ag-TEVA*: **(A)** polonium fraction without ^{209}Po tracer, **(B)** polonium fraction with ^{209}Po tracer, **(C)** thorium fraction without ^{230}Th tracer, **(D)** thorium fraction with ^{230}Th tracer. Panels **(E-F)** are representative spectra collected by *Method 2: TRU-TEVA*: **(E)** uranium fraction with ^{232}U tracer linear scale, **(F)** uranium fraction with ^{232}U tracer log scale.

Expanded methods

   Polonium-210 ingrowth

   Thorium-228 ingrowth

   Uranium absent

References